



U.S. Department
of Homeland Security

United States
Coast Guard



Guide for Administration of Merchant Marine Engineering Examinations (Engineering Guide)

November 2005

This Publication provides guidance for examination room proctors
and other personnel who actively monitor applicants in the exam room.



From: Commanding Officer, U.S. Coast Guard National Maritime Center
To: Distribution

SUBJ: GUIDE FOR THE ADMINISTRATION OF MERCHANT MARINE ENGINEERING
EXAMINATIONS (ENGINEERING GUIDE)

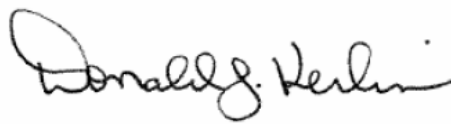
Ref: Code of Federal Regulations Title 46, Parts 10 and 12

1. PURPOSE. This manual provides guidance for the examination room proctors and other personnel who actively monitor merchant marine applicants in the exam room of the Regional Examination Centers (REC). Personnel administering Merchant Marine Engineering Examinations are to use this publication to determine which modules are to be administered for a given license level and what training is acceptable in lieu of an examination module.
2. ACTION. Commanding officers of units with marine safety responsibilities should bring this manual to the attention of the maritime industry with interests in marine personnel issues and to institutions that offer U. S. Coast Guard approved training. This manual will be distributed by electronic means only. It is available on the World Wide Web at <http://www.uscg.mil/STCW/m-policy.htm>.
3. DIRECTIVES AFFECTED. Previous edition of the Engineering Guide, dated February 2002, is cancelled.
4. DISCUSSION.
 - a. The engineering examination system for merchant marine engineers has been revised to incorporate changes to 46 CFR regarding the implementation of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 as amended (STCW). While not completely abandoning the written examination, the Coast Guard is emphasizing that the use of a written examination is only one of the key components in determining competency of the mariner. The competencies for merchant mariner licensed engineers are required to be completed for all Officers in Charge of an Engineering Watch indicated in the STCW Code, section A-III/1 and table A-III/1. All other candidates for first assistant engineer (referred to as second engineering officer by the STCW) and chief engineer are to complete the competencies identified in the STCW Code, section A-III/2 and table A-III/2.
 - b. The Examination Structure Sheets (ESS) contained in this manual reference the written examinations for each license and document.
 - c. The Coast Guard has developed an electronic distribution system of examination modules to improve examination quality and productivity. This manual reflects these changes and complements the use of the electronic distribution system.

5. PROCEDURE.

- a. The Examination Structure Sheets contained in this manual are effective on November 1, 2005 and the previous *Engineering Guide*, dated February 2002, is cancelled.
- b. The ESS contains detailed information for each license exam. Consult the ESS for unique directions, presentation order of examination modules, and guidance on courses accepted in lieu of an examination module.

6. PROCUREMENT INFORMATION. Distribution will be provided by electronic means for local reproduction only from the Internet at <http://www.uscg.mil/hq/g-m/nmc/web/index.htm>. Comments can be made to Commanding Officer, National Maritime Center (NMC-4B), 4200 Wilson Boulevard, Suite 630, Arlington, VA 22203-1804 or by calling (202) 493-1025.


for E. J. FINK

Dist: Commandant (G-MSO)
All District Commanders (m)
All COs, MSOs
All Activity Commanders
All REC's

| RECORD OF CHANGES | | | |
|-------------------|-------------------|-----------------|---------------|
| CHANGE NUMBER | DATE OF CHANGE | DATE ENTERED | ENTERED BY |
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INTRODUCTION

In its guidance on the Evaluation of Competence, the Seafarers Training, Certification, and Watchkeeping Code (STCW) states:

“Scope of knowledge is implicit in the concept of competence. Assessment of competence should, therefore, encompass more than the immediate technical requirements of the job, the skills and tasks to be performed, and should reflect the broader aspects needed to meet the full expectations of competent performance as a ship’s officer. This includes relevant knowledge, theory, principles and cognitive skills which, to varying degrees, underpin all levels of competence.”

For reasons such as these the Coast Guard continues to view its written examinations in addition to the training and practical demonstrations as an essential part of the process in developing the mariner competency.

This Publication has been designed primarily for the use of Examination Room Supervisors and other personnel who are actively engaged in overseeing applicants in the exam room. If you have any questions concerning the engine department examinations or suggestions for improvements to the Exam Structure Sheets or other sections of this manual, please contact:

Examination and Course Approval Branch (NMC-4B)
U.S. Coast Guard National Maritime Center
4200 Wilson Boulevard – Suite 630
Arlington, VA 22203-1804

Title 46 Code of Federal Regulations Part 10 instructs the Officer in Charge Marine Inspection (OCMI) to conduct a Professional Examination of applicants for original issues, raises in grade, increases in scope, and renewals of licenses. The examination follows a determination by the OCMI that the applicant’s training, appropriate practical demonstrations, and experience is satisfactory and they are eligible in all other respects. The purpose of this Publication is to help identify the appropriate professional examination for the OCMI’s use, and provide guidelines for the uniform administration of the examinations.

If you need further information or assistance with respect to these Exam Structure Sheets, please do not hesitate to call the USCG National Maritime Center at:

POC: Engine Team Leader
Tel: (202) 493-1046
Fax: (202) 493-1062
E Mail: ARL-DG-NMC-ETeam@ballston.uscg.mil

TABLE OF CONTENTS

| | Page # |
|---|---------------|
| Introduction | i |
| Table of Contents | ii |
| Instructions | iii through v |
| Rules of the Exam Room | vi |
| Comment - Protest Sheet | vii |
| Duties of an Examiner | viii |
| General Instructions | ix |
| Summary of Examination Modules for Engineering Licenses | x |

SECTION ONE

Unlimited Engineer Examinations

| | |
|--|-------------|
| Introduction | 1-2 |
| Examination Structure Sheets Index | 1-3 |
| Quick Reference | 1-4 |
| Examination Structure Sheets – Unlimited Engineers | 1-5 to 1-15 |

SECTION TWO

Limited Engineer Examinations

| | |
|--|------------|
| Introduction | 2-2 |
| Examination Structure Sheets Index | 2-3 |
| Quick reference | 2-4 |
| Examination Structure Sheets - Limited Engineers | 2-5 to 2-9 |

SECTION THREE

MODU Engineer Examinations

| | |
|---|-----|
| Introduction | 3-2 |
| Examination Structure Sheets – MODU Engineers | 3-3 |

SECTION FOUR

Unlicensed Engine Rating Examinations

| | |
|---|------------|
| Introduction | 4-2 |
| Examination Structure Sheets - Unlicensed Ratings | 4-3 to 4-6 |

SECTION FIVE

Appendix

| | |
|---|-------------|
| Lifeboatman Practical Demonstration | 5-2 to 5-13 |
|---|-------------|

INSTRUCTIONS

1. Examination Structure Sheets (ESS). The contents of each exam incorporating the use of test module(s) and the instructions for its administration are detailed in individual Examination Structure Sheets (ESS). There is an ESS for each license/document action for which an examination is required. Each examination is made up of one or more modules (tests). All the modules that might be required for a particular license or document action are shown, however, you may not need all modules. Further instructions will be provided on the individual ESS in those cases. Depending on the license/rating/endorsement for which the applicant is being examined, modules unique to a particular exam may be combined with generic modules, which are common to several exams. Each module is graded independently unless otherwise indicated.
2. Exam Room Materials. Engineering exam illustrations will be provided at the back of each exam module booklet. No other reference materials are permitted except for the open book renewal exercise. With the exception of providing the regulations, 46 CFR Parts 1-199 and 33 CFR Parts 1-199, no other reference materials are permitted except for the open book renewal exercise. Only non-programmable calculators are permitted. Review your libraries to ensure that these publications, and ONLY these publications, are available to the applicant. Regional Exam Centers (RECs) should keep reference materials current.
3. Exam Room Rules. The Rules of the Examination Room are listed on page vi of this publication as Figure 1.
4. Exam Procedure. When an applicant submits an application he or she should be prepared to be examined on all the material applicable to the license or document for which the application has been made. In order to allow Exam Room Supervisors to manage their time and resources it is recommended that applicants be required to make appointments for all exams. Subject to the Exam Room Supervisor's discretion, applicants may start the exam on any day the office is open. A limit of 3½ hours may be provided to each applicant to complete a test module. The examination fee set out in 46 CFR table 10.109 in Sec. 10.109 must be paid before the applicant may take the first examination section.
5. Exam Administration. When administering an examination for any license, document or a complete re-examination:
 - a. An applicant is to complete all exam modules on consecutive days.
 - b. An applicant may attempt as many modules as can be completed within the normal working hours of the examination room, provided a minimum of two modules are completed per day, with approximately 3½ hours allowed for each module.
 - c. Administration of modules is to be in the order published and listed in the ESS.
 - d. All of the modules comprising an exam must be completed before beginning retakes.
 - e. Applicants for any license level or document should not be stopped from testing even if they fail one or more modules. This ensures that if there is any change to the examination through the protest process or a correction to the exam is necessary, the applicant will not be penalized.
6. Retest Policy.
 - a. If an applicant for an **unlimited** license fails three or more sections, a complete reexamination must be administered, but may be taken during any of the scheduled exam periods. On the subsequent exam, if the applicant again fails three or more sections, at least 3 months must lapse before another complete examination is attempted, and a new examination fee is required.
 - b. If an applicant fails only one or two sections during their second attempt refer to (c) & (d).
 - c. If an applicant fails one or two sections of an examination, the applicant may be retested twice as is necessary on these sections during the next 3 months.
 - d. If the applicant does not successfully complete these sections within the 3 month period, a complete examination must be administered after a lapse of at least 3 months from the date of the last retest, and a new examination fee is required.

- e. The 3 month retest period may be extended by the OCMI if the applicant presents discharges documenting sea time which prevented the taking of a retest during the 3 month period. The retest period may not be extended beyond 7 months from the initial examination.
 - f. The scheduling of **all other** engineering examinations will be at the discretion of the OCMI. In the event of a failure, the applicant may be retested twice whenever the examination can be rescheduled with the OCMI. The applicant must be examined in all of the unsatisfactory sections of the preceding examination. If the applicant does not successfully complete all parts of the examination during a 3-month period from the initial test date, a complete reexamination must be taken after a lapse of at least 2 months from the date of the last retest, and a new examination fee is required.
 - g. Applicants failing several portions of an examination or those failing one module with an extremely low score should be encouraged to study before attempting a reexamination.
7. **Coordination.** When situations arise that require a departure from these instructions please request guidance from the National Maritime Center (NMC-4B) in writing (e-mail is acceptable). State the license or document for which application has been made, and why the applicant's circumstances are different from the norm. NMC will respond in writing to all RECs. In a spirit of fairness and in order to foster good customer relations all applicants are to be treated the same, regardless of where the applicant is being served.
8. **Planning.** When planning the administration of an exam away from the REC and the Traveling Exam Team (TET) requires support from NMC-4B, please ensure that advance notice of 30 days is provided in writing by e-mail or fax. The POC for Engineering Exams is to be the Engine Team Leader, with a copy to the Branch Chief, NMC-4B.
9. **Two Modules.** Where the ESS indicates two Engineering Modules labeled as Part I and Part II, they are to be graded individually and not to be considered as one module.
10. **Full Exams Required.** A full examination is required in all cases in which an applicant has applied to change tonnage groups, horsepower or otherwise raise the grade of his or her license.
11. **Comments and Protests.** If a candidate believes there is something wrong with a question that prevents it being answered correctly, i.e., no correct answer, question is poorly worded, etc, he or she must state in writing all the details regarding the discrepancies on a *Comment-Protest* sheet. The candidate must include his or her reasons and all calculations for math problems, such as pump capacity, stability, or cargo, etc and provide what he or she believes to be the correct answer. All comments, even if they will not affect the candidate's grade, are valuable and will be used to improve the quality of the questions used on future tests. If a candidate fails the exam module and has submitted comment sheets when turning in the completed answer sheet for grading, each comment sheet for a question not receiving credit will then become a *protest* for that question. Further, if the candidate fails the examination module by no more than one question, he or she will be given the opportunity to review each question for which credit was not given. Immediately after the review and prior to leaving the exam room, the candidate may submit a protest sheet for no more than two questions as indicated above. These two *protests* are in addition to any *comments* submitted prior to grading the answer sheet that subsequently change from a *comment* to a *protest*. Once the candidate has reviewed his or her answer sheet and leaves the exam room for **ANY REASON** before submitting their protest, the protests will not be accepted.
12. **Multiple Ratings.** When a candidate requires testing for multiple ratings, the method for assigning modules for the exam should be done in two steps. The first step is assignment of all applicable modules for the highest license. The second step is assignment of the modules for the lesser license(s) not included in the higher. Exceptions to this method may be necessary where other variables are involved.

13. Answer Sheets. In order to gather statistics on the exam questions, NMC-4B is now scanning the results into a database. For this reason, all original answer sheets must be collected and mailed to the National Maritime Center monthly. It is essential that the original Merchant Marine Examination Question Selection/Answer Sheet (CG-5164) for each candidate be forwarded since copies do not scan well. The forms are available from the Engineering Logistics Center. In order for the scanning system to work properly, the candidate must darken the appropriate spaces for their social security number, module number and test number at the top of the form as well as their choice of answer for each question. Do not accept for grading any CG-5164 that is not filled in completely. Do not make any administrative marks in the answer fields.
14. Oral Assisted Examinations. Guidance is provided in the USCG Marine Safety Manual, Volume III, Chapter 5, Section a-5.
15. Calculators. Applicants may use calculators, but are not permitted to use preprinted forms during the examinations. All calculators must meet the following standards:
 - a. It must not use pre-programmed strips or chips or any other pre-programmed device that may be inserted into the calculator.
 - b. It may not be a permanently programmed specialty computer, such as a navigation computer. Computers capable of generating trigonometric functions, logs and antilogs, squares, cubes, and roots thereof, are acceptable provided they meet the other requirements.
 - c. Any manually programmable calculator without simple erasure capability is not permitted.
 - d. Any printed calculator tape must be turned in at the end of the exam with any scratch paper.
16. Duties of an Examiner. General guidance regarding the duties of an Exam Room Supervisor is included on page viii as Figure 3.
17. Examination Scheduling. In order to accommodate the special circumstances involved, the graduating class of State and Federal maritime academies may be examined by the cognizant OCMI (REC), at any time after the first semester of the senior year. Examinations for other applicants may be administered only when all regulatory prerequisites are completed. Other applicants should be scheduled in accordance with the guidance provided in preceding paragraphs.

RULES OF THE EXAMINATION ROOM

1. Handbags, briefcases, pagers, cellular phones, books, notes, etc. are not allowed in the Exam Room. Use of personal plotting equipment is encouraged. However, the Examiner may provide these items. Programmable calculators are not allowed in the exam room. During the examination you may not refer to any material other than that specifically authorized by the Examiner.
2. Anyone engaged in any form of cheating during the exam, such as, referring to concealed notes, communicating with or copying work from other examinees, removing written material from the exam room, or any other dishonest practice, will be dismissed from the exam room and will be considered to have failed the entire exam. A re-exam will not be permitted for six months. Those examinees already holding a Merchant Mariner's Document or Coast Guard license may be summoned to appear before an Administrative Law Judge where their license may be suspended, or revoked, or other penalties assessed.
3. Examinees are not permitted to leave the exam room before a module is completed. Head (restroom) calls are not normally permitted. However, if required, the examinee shall be escorted to insure that no attempt is made to access additional information related to the exam. Upon completion of a module, all reference publications must be returned to their proper location in the exam room. The answer sheet and scratch paper is to be placed inside of the front cover of the booklet and given to the Examiner.
4. Eating and drinking is not permitted in the exam room.
5. The normal work hours for this center are _____ to _____. You may complete as many modules per day as the exam room working hours permit. A limit of 3½ hours will be permitted to complete each module. Once a module has been started, you are obligated to complete it. If an answer sheet is submitted with unanswered questions, these questions will be considered to have been answered incorrectly, which may result in a failing score.
6. Do not write or mark in the test booklets or any reference material. If you notice any marks in a test booklet or in any reference material, please notify the Examiner.
7. If you feel a question is faulty, unclear, or has no correct answer indicated, choose the most correct answer, mark the answer sheet accordingly, and complete a COMMENT - PROTEST SHEET provided by the Examiner. Explain as clearly as possible the specific concern or objection to the question. If you feel there is a more correct answer, you must **show** how you arrived at your answer including all **computations** for navigation and other mathematical problems. **An answer must be indicated on the answer sheet.**
8. The Examiner is always available to assist you. However, the Examiner cannot discuss question content with you. See item 7.

I HAVE READ AND UNDERSTAND THE ABOVE RULES.

I ALSO UNDERSTAND THAT I MUST COMPLETE THE ENTIRE EXAM, INCLUDING RETESTS IF ANY, WITHIN 90 DAYS OF THE BEGINNING OF THE EXAM CYCLE.

SIGNATURE: _____ DATE: _____

Figure 1: Exam Room Rules

COMMENT - PROTEST SHEET

FOR COAST GUARD USE ONLY:

☐ COMMENT

☐ PROTEST

APPLICANT'S NAME: _____

MODULE NAME: _____

MODULE NUMBER ☐☐☐☐☐ - ☐☐☐☐ QUESTION NUMBER _____

If you believe there is something wrong with a question that prevents it being answered correctly, i.e., no correct answer, or that you believe there is more than one correct answer shown, or the question is poorly worded, etc, please give all the details below. **Include** your reasons and all **calculations** for math problems such as pump capacity, navigation, stability, or cargo. **Provide** what you believe to be **the correct answer**. Even if your comments will not affect your grade, they are considered very valuable and will be used to improve the quality of the questions used on future tests. If you fail this exam and submit your comments with your completed answer sheet, each comment sheet for a question you did not receive credit will then become a protest for that question. Further, if you fail the examination module by no more than one question, you will be given the opportunity to review each question for which you were not given credit. Immediately after your review and without leaving the exam room following your review you may submit a protest as indicated above on no more than two questions in addition to the comment sheets you had submitted. If you review your answer sheet and leave the exam room for **ANY REASON**, prior to submitting your protests, they will not be accepted.

SIGNATURE: _____ DATE: _____

Figure 2: Comment – Protest Sheet

DUTIES OF AN EXAMINER

TYPICAL EXAMINATION PROCESSES

The examiner reviews the file of an applicant after the applicant has been approved to test for a license or endorsement. He/she reviews the file to determine the correct examination/examinations to administer. At the appropriate time, the examiner selects the modules from MMLDPROD and downloads them in preparation for the applicant's examination.

On the appointed morning after the appropriate exam fees are paid, the examiner identifies the applicant, reviews with the applicant the test procedures, reference material that may be available, and the operating procedures and rules of conduct during the exam. The applicant is given the initial module, a blank answer sheet and instructions specific to the particular test module. After the applicant completes the module and submits the answer sheet, the examiner is to perform an initial review to ensure that it is completed correctly. The applicant may then be given another test module if time permits and the applicant desires, or further testing may be deferred until the afternoon session or the following morning. The answer sheet is scored, the applicant informed of the results, and the results entered on the appropriate record. If the applicant has failed the module by no more than two questions, the examiner will allow a review of the module and submission of a protest if the applicant desires. If a protest is submitted, the examiner faxes it to the National Maritime Center for review. Upon receipt of the results of the review, the applicant is advised. These procedures continue until the applicant has completed all modules that are part of the examination.

During the actual testing, the examiner oversees the exam room to preclude cheating, answers procedural questions, and provides information if the applicant desires to comment on a question. If cheating is detected, the examiner takes steps to bar the applicant from further testing for six months. At the end of the workday, the examiner accounts for all modules used; shreds used modules, scrap paper, and used charts; and prepares for the next day of testing.

After the final module and the applicant has passed the examination, the examiner reviews the applicant's file to ensure that all entries have been made and forwards the file to the issuance section. The applicant is advised of the next steps in the issuance process. If the applicant failed the examination, he or she is advised of the next steps in the testing process and another examination date is scheduled if the applicant remains eligible.

GENERAL DUTIES NOT INCLUDED ABOVE

- a. Reviews reference material to ensure that sufficient copies are available, that they are in satisfactory condition, that extraneous markings are removed, and that the material is stowed in an orderly fashion. When necessary, orders new reference material for addition to the library and purges outdated material.
- b. Ensures that consumables are adequate. Orders extra consumables when necessary.
- c. Checks examination room after closing for evidence of cheating and takes appropriate action to identify the cheater if evidence is found.
- d. Ensures that furniture in the exam room is adequate for intended use and in good, safe condition. If not, takes appropriate action to remedy.
- e. Maintains a daily log of the persons tested.
- f. Ensures that modules and completed answer sheets are filed with adequate security.

Figure 3: Duties of an Examiner

General Instructions for the Administration of Engineering Examinations

1. The Engine Guide is divided into four sections, in addition to an appendices section, according to the engineering level for which an applicant will be examined. Each section contains an introduction and the examination structure sheets for administering all engineering exams and required subjects. The sections for the unlimited and limited engineering license examinations also contain an index to the examinations within the section and a quick reference table.
2. This introduction lists general policy applicable to all engineering examinations in each section.
3. The quick reference sheet shows at a glance the number of modules required for each examination and provides a quick comparison of the total number of modules required to test an applicant at each license level.
4. A module code is a five-digit number that specifically identifies an examination module. The *first* digit specifies the license area of the exam; e.g., 5XXXX, upper level licenses; 6XXXX, lower level licenses; and 8XXXX, QMED ratings. The *second* digit specifies the level of the exam, such as 50XXX, upper level, chief engineer, unlimited horsepower. The *third* digit specifies the examination subject area, such as 504XX, upper level, chief engineer, unlimited horsepower, electricity. The fourth (4) digit is used to indicate the year in which the module is generated, i.e., 50451 indicates a module generated in the year 2005. The fifth (5) digit represents the version generated in that year, such as modules 50451 and 50452, whereas 1 and 2 are the respective version numbers. Different versions of the test are used to vary the distribution of questions selected from the subject areas included in a typical module and the use of different versions is encouraged.
5. Each section provides all the examination structure sheets within the specific section of the Engineering Guide and the numbered, applicable examination structure sheets for a particular examination.
6. The order in which the examination structure sheets are presented represent a progression of the unlimited engineer licenses beginning with the third assistant engineer (53XXX), then second assistant engineer (52XXX), then first assistant engineer (51XXX), and ending with chief engineer (50XXX).
7. The applicable examination structure sheet contains the specific policy that applies to a particular license examination and/or its assessment process.

SUMMARY OF EXAMINATION MODULE CODES

SECTION ONE - UNLIMITED ENGINEERING LICENSES

| MODULE CODE | MODULE NAME |
|-------------|-------------|
|-------------|-------------|

| | |
|-------|---|
| 50XXX | UNLIMITED CHIEF ENGINEER |
| 51XXX | UNLIMITED FIRST ASSISTANT ENGINEER |
| 52XXX | UNLIMITED SECOND ASSISTANT ENGINEER |
| 53XXX | UNLIMITED THIRD ASSISTANT ENGINEER |
| 54XXX | UNLIMITED CHIEF / FIRST ASSISTANT ENGINEER, ENDORSEMENT |
| 55XXX | UNLIMITED ENGINEERING LICENSES, RENEWAL EXERCISE |

SECTION TWO - LIMITED ENGINEERING LICENSES

| | |
|-------|--|
| 60XXX | CHIEF ENGINEER - LIMITED |
| 61XXX | ASSISTANT ENGINEER - LIMITED / DESIGNATED DUTY ENGINEER UNLIMITED HORSEPOWER |
| 617XX | LIMITED ENGINEERING LICENSE, RENEWAL EXERCISE |
| 65XXX | UNINSPECTED FISHING VESSEL, CHIEF ENGINEER |
| 66XXX | UNINSPECTED FISHING VESSEL, ASSISTANT ENGINEER |
| 68XXX | DESIGNATED DUTY ENGINEER UNLIMITED HORSEPOWER |
| 69XXX | DESIGNATED DUTY ENGINEER 1000/4000 HORSEPOWER |
| 70XXX | CHIEF ENGINEER (OSV) |
| 71XXX | ENGINEER (OSV) |

SECTION THREE - MOBIL OFFSHORE DRILLING UNIT ENGINEERING LICENSES

| | |
|-------|--|
| 62XXX | CHIEF ENGINEER (MODU) |
| 63XXX | ASSISTANT ENGINEER (MODU) |
| 64XXX | LIMITED ENGINEERING (MODU), RENEWAL EXERCISE |

SECTION FOUR - UNLICENSED ENGINE RATINGS

| | |
|-------|-------------------------------|
| 80XXX | GENERAL SAFETY |
| 81XXX | JUNIOR ENGINEER |
| 82XXX | DECK ENGINEER |
| 83XXX | ELECTRICIAN |
| 84XXX | REFRIGERATION ENGINEER |
| 85XXX | MACHINIST |
| 86XXX | FIREMAN/WATERTENDER |
| 87XXX | OILER, STEAM & MOTOR |
| 88XXX | PUMPMAN |
| 89XXX | OILER, MOTOR VESSELS, LIMITED |
| 90XXX | QMED RENEWAL EXERCISE |

SECTION ONE

UNLIMITED

ENGINEERING LICENSES

Examination Structure Sheets

THIRD ASSISTANT ENGINEER

SECOND ASSISTANT ENGINEER

FIRST ASSISTANT ENGINEER

CHIEF ENGINEER

INTRODUCTION
ADMINISTRATION OF UPPER LEVEL
UNLIMITED HORSEPOWER - ENGINEERING EXAMINATIONS

1. SCHEDULING EXAM TIME LIMITS AND GRADING POLICY

A time limit of 3½ hours may be provided to each applicant to complete a test module except as necessary to accommodate the working hours of the examination room. Applicants starting to test in the morning, at the opening of the exam room, should be able to complete a minimum of two modules that day when two or more modules in an examination are to be administered. If they desire, and time permits, they may complete more than two modules. Applicants starting a module late in the afternoon should be advised that it must be completed by the normal closing time; unanswered questions will be treated as wrong answers. An applicant for an unlimited license must complete the entire exam on consecutive business days. To eliminate confusion the modules should be administered in the published order. A minimum score of 70% is required to pass each module, except for the renewal exercise module, which requires a 90% to pass. All modules for engineers are graded individually.

2. EXAMINATION CYCLES

Subject to the requirements of paragraph 1, the examination cycle may begin on any business day, and at anytime during the day as designated by the SIP.

3. REFERENCE MATERIAL

Engineering exam illustrations will be provided at the back of each exam module booklet. With the exception of providing the regulations, 46 CFR Parts 1-199 and 33 CFR Parts 1-199, no other reference materials are permitted except for the open book renewal exercise. Only non-programmable calculators are permitted.

4. INCREASING THE SCOPE OF PROPULSION MODE FOR CHIEF, FIRST, SECOND AND THIRD ASSISTANT ENGINEERS

Applicants wishing to increase the scope of their propulsion mode to STEAM, MOTOR and/or GAS TURBINE are required to be tested with specific modules in the new propulsion area. The complete list of required modules are defined for Third Assistant Engineer in ESS 1-1 thru 1-5, for Second Assistant Engineer in ESS 1-6 thru 1-9, for First Assistant Engineer in ESS 1-10 thru 1-13 and for Chief Engineer in ESS 1-14 thru 1-17.

5. LIMITED CHIEF ENGINEER CROSS OVER TO UNLIMITED THIRD OR SECOND ASSISTANT ENGINEER

A limited Chief Engineer (Near Coastal) or (Oceans) desiring to crossover to unlimited Third Assistant or Second Assistant Engineer (Motor) respectively are to be tested on all Second Assistant engine modules regardless of the issuing date of their limited Chief Engineer license. These candidates must also satisfy the requirements of STCW, including documentation of the successful completion of all practical demonstrations.

6. RENEWAL EXERCISE

The license renewal exercises for Chief, First, Second, and Third Assistant Engineers are consolidated into one open book exercise for each propulsion mode being renewed.

7. QUESTIONS

Any questions regarding engineering license or document examinations should be referred to the National Maritime Center, Examination Administration Branch, Engineering Team, at (202) 493 1046.

EXAMINATION STRUCTURE SHEETS INDEX
UNLIMITED HORSEPOWER ENGINEERING LICENSES

| EXAM TITLE | Examination Structure Sheets (ESS) |
|--|---|
| Original | Operational Level |
| Third Assistant Engineer, Motor | ESS 1-1 |
| Third Assistant Engineer, Steam | ESS 1-2 |
| Third Assistant Engineer, Steam and Motor | ESS 1-3 |
| Third Assistant Engineer, Gas Turbine | ESS 1-4 |
| Increase in Scope | |
| Third Assistant Engineer, Steam, Motor or Gas Turbine | ESS 1-5 |
| Raise in Grade | |
| Second Assistant Engineer, Motor | ESS 1-6 |
| Second Assistant Engineer, Steam | ESS 1-7 |
| Second Assistant Engineer, Steam and Motor | ESS 1-8 |
| Increase in Scope | |
| Second Assistant Engineer, Steam, Motor or Gas Turbine | ESS 1-9 |
| Management Level | |
| First Assistant Engineer, Motor | ESS 1-10 |
| First Assistant Engineer, Steam | ESS 1-11 |
| First Assistant Engineer, Steam and Motor | ESS 1-12 |
| Increase in Scope | |
| First Assistant Engineer, Steam, Motor or Gas Turbine | ESS 1-13 |
| Raise in Grade | |
| Chief Engineer, Motor | ESS 1-14 |
| Chief Engineer, Steam | ESS 1-15 |
| Chief Engineer, Steam and Motor | ESS 1-16 |
| Increase in Scope | |
| Chief Engineer, Steam, Motor or Gas Turbine | ESS 1-17 |
| Renewal | |
| Unlimited Engineering, Motor | ESS 1-18 |
| Unlimited Engineering, Steam | ESS 1-19 |

QUICK REFERENCE - UPPER LEVEL - UNLIMITED ENGINEERING LICENSES

THIRD ASSISTANT ENGINEER

| <u>SUBJECT</u> | <u>MODULE CODE</u> | <u>STEAM ONLY</u> | <u>MOTOR ONLY</u> | <u>STEAM MOTOR</u> | GT |
|---|-------------------------------|------------------------------|------------------------------|-------------------------------|-----------|
| Motor Plants, Part I | 531-- | | X | X | |
| Motor Plants, Part II | 532-- | | X | X | |
| Engineering Safety and Environmental Protection | 534-- | X | X | X | |
| General Subjects | 535-- | X | X | X | |
| Electricity | 536-- | X | X | X | |
| Steam Plants, Part I | 537-- | X | | X | |
| Steam Plants, Part II | 538-- | X | | X | |
| Gas Turbine* | 586-- | | | | X |

SECOND ASSISTANT ENGINEER

(Refer to Examination Structure Sheets 1-6 thru 1-9)

FIRST ASSISTANT ENGINEER

| <u>SUBJECT</u> | <u>MODULE CODE</u> | <u>STEAM ONLY</u> | <u>MOTOR ONLY</u> | <u>STEAM MOTOR</u> | GT |
|---|-------------------------------|------------------------------|------------------------------|-------------------------------|-----------|
| General Subjects, Part I | 511-- | X | X | X | |
| General Subjects, Part II | 512-- | X | X | X | |
| Steam Plants | 513-- | X | | X | |
| Electricity, Electronics and Control Systems | 514-- | X | X | X | |
| Engineering Safety and Environmental Protection | 515-- | X | X | X | |
| Motor Plants | 516-- | | X | X | |
| Endorsement Steam Plants, Part II | 545-- | X | | X | |
| Endorsement Motor Plants, Part II | 547-- | | X | X | |
| Endorsement Gas Turbine** | (See Note Below) | | | | |

CHIEF ENGINEER

(Refer to Examination Structure Sheets 1-14 thru 1-17)

RENEWAL EXERCISES

(Refer to Examination Structure Sheets 1-18 thru 1-19)

* Gas Turbine Propulsion Test Modules for an original license will be provided upon request to NMC

** Any Gas Turbine Plants endorsement to a Steam and/or Motor license, may only be added to a license after the applicant has provided evidence of the successful completion of an approved Gas Turbine Training course.

X Indicates a module that is part of the core exam.

| | | | |
|---|--|--|--------------------------|
| EXAMINATION STRUCTURE SHEET NO. 1-1 | License Type- License Group- License Action- License Condition- | THIRD ASSISTANT ENGINEER (OICEW) UNLIMITED ORIGINAL MOTOR | EXAM CODE 53CO |
| NO. OF MODULES: Five (5) MODULE PRESENTATION ORDER | | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 531--, Motor Plants, Part I | | 70 | 70 |
| 532--, Motor Plants, Part II | | 70 | 70 |
| 534--, Engineering Safety & Environmental Protection | | 70 | 70 |
| 535--, General Subjects | | 70 | 70 |
| 536--, Electricity | | 70 | 70 |

| | | | |
|--|---|--|--------------------------|
| EXAMINATION STRUCTURE SHEET NO. 1-2 | License Type - License Group- License Action- License Condition- | THIRD ASSISTANT ENGINEER (OICEW) UNLIMITED ORIGINAL STEAM | EXAM CODE 53BO |
| NO. OF MODULES: Five (5) MODULE PRESENTATION ORDER: | | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 534--, Engineering Safety & Environmental Protection | | 70 | 70 |
| 535--, General Subjects | | 70 | 70 |
| 536--, Electricity | | 70 | 70 |
| 537--, Steam Plants, Part I | | 70 | 70 |
| 538--, Steam Plants, Part II | | 70 | 70 |

| | | | |
|---|---|--|----------------------|
| EXAMINATION STRUCTURE SHEET NO. 1-3 | License Type - License Group- License Action - License Condition | THIRD ASSISTANT ENGINEER (OICEW) UNLIMITED ORIGINAL STEAM AND MOTOR | EXAM CODE 53AO |
| NO. OF MODULES: Seven (7) MODULE PRESENTATION ORDER: | | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 531--, Motor Plants, Part I | | 70 | 70 |
| 532--, Motor Plants, Part II | | 70 | 70 |
| 534--, Engineering Safety & Environmental Protection | | 70 | 70 |
| 535--, General Subjects | | 70 | 70 |
| 536--, Electricity | | 70 | 70 |
| 537--, Steam Plants, Part I | | 70 | 70 |
| 538--, Steam Plants, Part II | | 70 | 70 |

| | | | |
|--|--|---|----------------------|
| EXAMINATION STRUCTURE SHEET NO. 1-4 | License Type - License Group- License Action- License Condition | THIRD ASSISTANT ENGINEER (OICEW) UNLIMITED ORIGINAL GAS TURBINE ^{1,2} | EXAM CODE 53GT |
| NO. OF MODULES: Four (4) MODULE PRESENTATION ORDER: | | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 534--, Engineering Safety & Environmental Protection | | 70 | 70 |
| 535--, General Subjects | | 70 | 70 |
| 536--, Electricity | | 70 | 70 |
| 586--, Gas Turbine Plants | | 50 | 70 |

Remarks:

1. A candidate for an Original Third Assistant Engineer Gas Turbine Only license may be examined by the modules listed above in ESS 1-4 having provided documentation of receiving gas turbine training and appropriate military sea going service on gas turbine propelled vessels.
2. A Gas Turbine Plants endorsement to a Steam and/or Motor license, may only be added to a license after the applicant has provided evidence of the successful completion of an approved Gas Turbine Training course.

| EXAMINATION STRUCTURE SHEET NO. 1-5 | License Type - License Group - License Action - License Condition | THIRD ASSISTANT ENGINEER (OICEW) UNLIMITED INCREASING SCOPE STEAM, MOTOR OR GAS TURBINE | EXAM CODE 53AI, 53BI |
|---|--|--|-------------------------|
| MODULE PRESENTATION ORDER: | | NUMBER OF QUESTIONS | MINIMUM SCORE |
| From Motor to Steam Exam Code 53AI | | | |
| 537-- Steam Plants | | 70 | 70 |
| 538-- Steam Plants Part II | | 70 | 70 |
| | | | |
| From Steam to Motor Exam Code 53BI | | | |
| 531-- Motor Plants | | 70 | 70 |
| 532-- Motor Plants Part II | | 70 | 70 |
| | | | |
| From Steam and/or Motor to Gas Turbine | | | |
| Gas Turbine Plants Course (See Note #3) | | | |

Remarks:

1. This examination structure sheet is for applicants who wish to increase the scope of their existing license by obtaining a steam or motor endorsement respectively.
2. Each applicant is required to be examined with the specified modules for the propulsion mode they are applying for as listed above.
3. A Gas Turbine endorsement to a Steam and/or Motor license, may only be added to a license after the applicant has provided evidence of the successful completion of an approved Gas Turbine Training course.

| | | | |
|--|---|---|--------------------------|
| EXAMINATION STRUCTURE SHEET NO. 1-6 | License Type- License Group- License Action- License Condition | SECOND ASSISTANT ENGINEER UNLIMITED RAISE IN GRADE MOTOR | EXAM CODE 52CR |
| NO. OF MODULES: Five (5) MODULE PRESENTATION ORDER: | | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 521--, Motor Plants, Plants I | | 70 | 70 |
| 522--, Motor Plants, Part II | | 70 | 70 |
| 523--, General Subjects | | 70 | 70 |
| 524--, Electricity | | 70 | 70 |
| 525--, Engineering Safety & Environmental Protection | | 70 | 70 |

Remarks:

(1) Applicants for Second Assistant Engineer, who were examined for their Third Assistant Engineer's license prior to February 1, 2002 and have acquired sea service as per 46 CFR 10.516, will need to be tested on the modules listed above for a raise in grade.

(2) Applicants for Second Assistant Engineer, who completed training in accordance with the STCW Code section A-III/1 and Table A-III/1 and were issued a Third Assistant Engineers license after February 1, 2002, may be issued a Second Assistant Engineer license with no further examination, after presenting one year sea service as Third Assistant Engineer.

| | | | |
|--|---|---|--------------------------|
| EXAMINATION STRUCTURE SHEET NO. 1-7 | License Type- License Group- License Action- License Condition | SECOND ASSISTANT ENGINEER UNLIMITED RAISE IN GRADE STEAM | EXAM CODE 52BR |
| NO. OF MODULES: Five (5) MODULE PRESENTATION ORDER: | | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 523--, General Subjects | | 70 | 70 |
| 524--, Electricity | | 70 | 70 |
| 525--, Engineering Safety & Environmental Protection | | 70 | 70 |
| 526--, Steam Plants, Part I | | 70 | 70 |
| 527--, Steam Plants, Part II | | 70 | 70 |

Remarks:

(1) Applicants for Second Assistant Engineer, who were examined for their Third Assistant Engineer's license prior to February 1, 2002 and have acquired sea service as per 46 CFR 10.516, will need to be tested on the modules listed above for a raise in grade.

(2) Applicants for Second Assistant Engineer, who completed training in accordance with the STCW Code section A-III/1 and Table A-III/1 and were issued a Third Assistant Engineers license after February 1, 2002, may be issued a Second Assistant Engineer license with no further examination, after presenting one year sea service as Third Assistant Engineer.

| | | | |
|---|--|---|--------------------------|
| EXAMINATION STRUCTURE SHEET NO. 1-8 | License Type License Group License Action License Condition | SECOND ASSISTANT ENGINEER UNLIMITED RAISE IN GRADE STEAM AND MOTOR | EXAM CODE 52AR |
| NO. OF MODULES: Seven (7) MODULE PRESENTATION ORDER: | | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 521--, Motor Plants, Part I | | 70 | 70 |
| 522--, Motor Plants, Part II | | 70 | 70 |
| 523--, General Subjects | | 70 | 70 |
| 524--, Electricity | | 70 | 70 |
| 525--, Engineering Safety & Environmental Protection | | 70 | 70 |
| 526--, Steam Plants, Part I | | 70 | 70 |
| 527--, Steam Plants, Part II | | 70 | 70 |

Remarks:

- (1) Applicants for Second Assistant Engineer, who were examined for their Third Assistant Engineer's license prior to February 1, 2002 and have acquired sea service as per 46 CFR 10.516, will need to be tested on the modules listed above for a raise in grade.
- (2) Applicants for Second Assistant Engineer, who completed training in accordance with the STCW Code section A-III/1 and Table A-III/1 and were issued a Third Assistant Engineers license after February 1, 2002, may be issued a Second Assistant Engineer license with no further examination, after presenting one year sea service as Third Assistant Engineer.

| | | | |
|---|--|---|--------------------------|
| EXAMINATION STRUCTURE SHEET NO. 1-9 | License Type License Group License Action License Condition | SECOND ASSISTANT ENGINEER UNLIMITED INCREASING SCOPE STEAM, MOTOR OR GAS TURBINE | EXAM CODE 52AI, 52BI |
| MODULE PRESENTATION ORDER: | | NUMBER OF QUESTIONS | MINIMUM SCORE |
| From Motor to Steam Exam Code 52AI | | | |
| 526-- Steam Plants Part I | | 70 | 70 |
| 527-- Steam Plants Part II | | 70 | 70 |
| From Steam to Motor Exam Code 52BI | | | |
| 521-- Motor Plants Part I | | 70 | 70 |
| 522-- Motor Plants Part II | | 70 | 70 |
| From Steam and/or Motor to Gas Turbine | | | |
| Gas Turbine Plants Course (See Note #3) | | | |

Remarks:

1. This examination structure sheet is for applicants who wish to increase the scope of their existing license by obtaining a steam or motor endorsement respectively.
2. Each applicant is required to be examined with the specified modules for the propulsion mode they are applying for as listed above.
3. A Gas Turbine Plants endorsement to a Steam and/or Motor license, may only be added to a license after the applicant has provided evidence of the successful completion of an approved Gas Turbine Training course.

| | | | |
|--|--|--|--------------------------|
| EXAMINATION STRUCTURE SHEET NO. 1-10 | License Type - License Group- License Action- License Condition | FIRST ASSISTANT ENGINEER UNLIMITED RAISE IN GRADE MOTOR | EXAM CODE 51CO |
| NO. OF MODULES: Five (5) MODULE PRESENTATION ORDER: | | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 511--, General Subjects, Part I | | 70 | 70 |
| 512--, General Subjects, Part II | | 70 | 70 |
| 514--, Electricity, Electronics & Control Systems | | 70 | 70 |
| 515--, Engineering Safety & Environmental Protection | | 70 | 70 |
| 516--, Motor Plants | | 70 | 70 |

| | | | |
|--|--|--|--------------------------|
| EXAMINATION STRUCTURE SHEET NO. 1-11 | License Type - License Group- License Action- License Condition | FIRST ASSISTANT ENGINEER UNLIMITED RAISE IN GRADE STEAM | EXAM CODE 51BO |
| NO. OF MODULES: Five (5) MODULE PRESENTATION ORDER: | | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 511--, General Subjects, Part I | | 70 | 70 |
| 512--, General Subjects, Part II | | 70 | 70 |
| 513--, Steam Plants | | 70 | 70 |
| 514--, Electricity, Electronics & Control Systems | | 70 | 70 |
| 515--, Engineering Safety & Environmental Protection | | 70 | 70 |

| | | | |
|---|--|--|--------------------------|
| EXAMINATION STRUCTURE SHEET NO. 1-12 | License Type- License Group- License Action - License Condition | FIRST ASSISTANT ENGINEER UNLIMITED RAISE IN GRADE STEAM AND MOTOR | EXAM CODE 51AO |
| NO. OF MODULES: Six (6) MODULE PRESENTATION ORDER: | | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 511--, General Subjects, Part I | | 70 | 70 |
| 512--, General Subjects, Part II | | 70 | 70 |
| 513--, Steam Plants | | 70 | 70 |
| 514--, Electricity, Electronics & control Systems | | 70 | 70 |
| 515--, Engineering Safety & Environmental Protection | | 70 | 70 |
| 516--, Motor Plants | | 70 | 70 |

| | | | |
|---|--|--|--------------------------|
| EXAMINATION STRUCTURE SHEET NO. 1-13 | License Type - License Group License Action License Condition | FIRST ASSISTANT ENGINEER UNLIMITED INCREASING SCOPE STEAM, MOTOR OR GAS TURBINE | EXAM CODE 51AI, 51AJ |
| MODULE PRESENTATION ORDER: | | NUMBER OF QUESTIONS | MINIMUM SCORE |
| From Motor to Steam Exam Code 51AI | | | |
| 513--, Steam Plants | | 70 | 70 |
| 545--, Endorsement Steam Plants Part II | | 70 | 70 |
| From Steam to Motor Exam Code 51AJ | | | |
| 516--, Motor Plants | | 70 | 70 |
| 547--, Endorsement Motor Plants Part II | | 70 | 70 |
| From Steam and/or Motor to Gas Turbine | | | |
| Gas Turbine Plants Course (See Note #3) | | | |

Remarks:

1. This examination structure sheet is for applicants who wish to increase the scope of their existing license by obtaining a steam or motor endorsement respectively.
2. Each applicant is required to be examined with the specified modules for the propulsion mode they are applying for as listed above.
3. A Gas Turbine Plants endorsement to a Steam and/or Motor license, may only be added to a license after the applicant has provided evidence of the successful completion of an approved Gas Turbine Training course.

| | | | |
|--|--|--|----------------------|
| EXAMINATION STRUCTURE SHEET NO. 1-14 | License Type License Group License Action License Condition | CHIEF ENGINEER UNLIMITED RAISE IN GRADE MOTOR | EXAM CODE 50CR |
| NO. OF MODULES: Five (5) MODULE PRESENTATION ORDER: | | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 501--, General Subjects, Part I | | 70 | 70 |
| 502--, General Subjects, Part II | | 70 | 70 |
| 504--, Electricity, Electronics &Control Systems | | 70 | 70 |
| 505--, Engineering Safety & Environmental Protection | | 70 | 70 |
| 506--, Motor Plants | | 70 | 70 |

Remarks: All applicants for chief engineer unlimited Motor must complete the modules listed above.

| | | | |
|--|--|--|--------------------------|
| EXAMINATION STRUCTURE SHEET NO. 1-15 | License Type License Group License Action License Condition | CHIEF ENGINEER UNLIMITED RAISE IN GRADE STEAM | EXAM CODE 50BR |
| NO. OF MODULES: Five (5) MODULE PRESENTATION ORDER: | | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 501--, General Subjects, Part I | | 70 | 70 |
| 502--, General Subjects, Part II | | 70 | 70 |
| 503--, Steam Plants | | 70 | 70 |
| 504--, Electricity, Electronics &Control Systems | | 70 | 70 |
| 505--, Engineering Safety & Environmental Protection | | 70 | 70 |

Remarks: All applicants for chief engineer unlimited Steam must complete the modules listed above.

| | | | |
|---|--|--|--------------------------|
| EXAMINATION STRUCTURE SHEET NO. 1-16 | License Type - License Group - License Action - License Condition - | CHIEF ENGINEER UNLIMITED RAISE IN GRADE STEAM AND MOTOR | EXAM CODE 50AR |
| NO. OF MODULES: Six (6) MODULE PRESENTATION ORDER: | | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 501--, General Subjects, Part I | | 70 | 70 |
| 502--, General Subjects, Part II | | 70 | 70 |
| 503--, Steam Plants | | 70 | 70 |
| 504--, Electricity, Electronics & Control Systems | | 70 | 70 |
| 505--, Engineering Safety & Environmental Protection | | 70 | 70 |
| 506--, Motor Plants | | 70 | 70 |

Remarks: All applicants for chief engineer unlimited Steam and Motor must complete the modules listed above.

| | | | |
|---|--|--|--------------------------|
| EXAMINATION STRUCTURE SHEET NO. 1-17 | License Type License Group License Action License Condition | CHIEF ENGINEER UNLIMITED INCREASING SCOPE STEAM, MOTOR OR GAS TURBINE | EXAM CODE 50IA, 50IB |
| MODULE PRESENTATION ORDER: | | NUMBER OF QUESTIONS | MINIMUM SCORE |
| From Motor to Steam Exam Code 50IA | | | |
| 503---Steam Plants | | 70 | 70 |
| 545—Endorsement Steam Plants | | 70 | 70 |
| From Steam to Motor Exam Code 50IB | | | |
| 506—Motor Plants | | 70 | 70 |
| 547--Endorsement Motor Plants | | 70 | 70 |
| From Steam and/or Motor to Gas Turbine | | | |
| Gas Turbine Plants Course (See Note #3) | | | |

Remarks:

1. This examination structure sheet is for applicants who wish to increase the scope of their existing license by obtaining a steam or motor endorsement respectively.
2. Each applicant is required to be examined with the specified modules for the propulsion mode they are applying for as listed above.
3. A Gas Turbine Plants endorsement to a Steam and/or Motor license, may only be added to a license after the applicant has provided evidence of the successful completion of an approved Gas Turbine Training course.

| | | | |
|---|---|--|----------------------|
| EXAMINATION STRUCTURE SHEET NO. 1-18 | License Type - License Group- License Action - License Condition | ENGINEERING (RENEWAL) UNLIMITED RENEWAL MOTOR | EXAM CODE 55AB |
| NO. OF MODULES: One (1) MODULE PRESENTATION ORDER: | | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 551--, Unlimited Engineering Renewal Exercise, Motor | | 70 | 90 |

| | | | |
|---|---|--|-------------------------------|
| EXAMINATION STRUCTURE SHEET NO. 1-19 | License Type - License Group- License Action - License Condition - | ENGINEERING (RENEWAL) UNLIMITED RENEWAL STEAM | EXAM CODE 55AC |
| NO. OF MODULES: One (1) MODULE PRESENTATION ORDER: | | NUMBER OF QUESTIONS | MINIM UM SCORE |
| 552--, Unlimited Engineering Renewal Exercise, Steam | | 70 | 90 |

Remarks:

1. The renewal exercises are open book.
2. Each applicant is required to be pass the specified modules for the propulsion mode they are renewing as listed above.
3. If an applicant does not receive a passing score on the first attempt they should be given one attempt to correct the questions they have missed. If unsuccessful at obtaining a passing score after reviewing the missed questions, the applicant should be given a different version of the exercise for the third and final try before undergoing a three month waiting period.

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SECTION TWO

LIMITED

ENGINEERING LICENSES

EXAMINATION STRUCTURE SHEETS

CHIEF ENGINEER (LIMITED)

ASSISTANT ENGINEER (LIMITED)

CHIEF ENGINEER (OSV)

ENGINEER (OSV)

CHIEF ENGINEER (OSV) NEAR COASTAL DOMESTIC

ENGINEER (OSV) NEAR COASTAL DOMESTIC

DESIGNATED DUTY ENGINEER

CHIEF ENGINEER, UNINSPECTED FISHING INDUSTRY VESSELS

ASSISTANT ENGINEER, UNINSPECTED FISHING INDUSTRY VESSELS

INTRODUCTION

ADMINISTRATION OF LIMITED LEVEL ENGINEERING EXAMINATIONS

1. OVERVIEW

The written examination is the final step or capstone in the process for attaining an engineering license. All other U. S. Regulatory or STCW requirements must be completed prior to the candidate being examined. Only the motor propulsion mode for limited license examinations will be made available to the REC's. The **steam propulsion** mode for limited power/tonnage engineering licenses is not considered viable due to the small number of these vessels. An engineer desiring to have their license endorsed for steam plants of limited power/limited tonnage must first hold a comparable motor license and complete a training program established for the operation of a limited horsepower steam plant to obtain this endorsement. Where a specific need is determined for the operation of limited horsepower steam vessels, the owner/operator of these vessels is responsible for verifying the engineers' competency in the operation of these plants

2. TIME OF EXAMINATION AND GRADING POLICY

A time limit of 3½ hours may be provided to each applicant to complete a test module except as necessary to accommodate the working hours of the examination room. Applicants starting to test in the morning, at the opening of the exam room, must complete a minimum of two modules that day when two or more modules in an exam series are to be administered. If time permits, they may complete more than two modules. Applicants starting a module late in the afternoon should be advised that it must be completed by the normal closing time; unanswered questions will be treated as wrong answers. An applicant for a limited license must complete the entire exam on consecutive business days. Modules should be administered in the published order. All modules are graded separately. A minimum score of 70% is required to pass each module, except for the renewal exercise open book modules, which require 90% to pass.

3. REFERENCE MATERIAL

Engineering exam illustrations will be provided at the back of each exam module booklet. With the exception of providing the regulations, 46 CFR Parts 1-199 and 33 CFR Parts 1-199, no other reference materials are permitted except for the open book renewal exercise. Only non-programmable calculators are permitted.

4. EXAMINATION CYCLES

Subject to the requirements of paragraph 1 and 2, the examination cycle may begin on any workday, and at anytime during the day as designated by the SIP.

5. RENEWAL EXERCISE

The renewal exercises for **Limited Chief and Assistant Engineer, Chief Engineer (OSV) and Engineer (OSV), Uninspected Fishing Industry Vessel Chief Engineer and Assistant Engineer**, and **DDE unlimited HP and DDE 1000/4000 HP** have been consolidated into one open book exercise.

6. QUESTIONS

Any questions regarding engineering license or document examinations should be referred to the National Maritime Center, Examination Administration Branch, Engineering Team, at (202) 493 1046.

Examination Structure Sheets INDEX

For

LIMITED Engineer Licenses (Horsepower/Tonnage)

EXAM TITLE

Exam Structure Sheets (ESS)

| | |
|--|----------|
| Assistant Engineer Limited / DDE Unlimited Horsepower----- | ESS 2-1 |
| Chief Engineer Limited, Near Coastal ----- | ESS 2-2 |
| Chief Engineer Limited, Oceans ----- | ESS 2-3 |
| Engineer, (OSV) ----- | ESS 2-4 |
| Chief Engineer, (OSV) Domestic, Near Coastal ----- | ESS 2-5 |
| Chief Engineer, (OSV) ----- | ESS 2-6 |
| Designated Duty Engineer 1000/4000 Horsepower ----- | ESS 2-7 |
| Designated Duty Engineer Unlimited Horsepower ----- | ESS 2-8 |
| Assistant Engineer, Uninspected Fishing Industry Vessels ----- | ESS 2-9 |
| Chief Engineer, Uninspected Fishing Industry Vessels ----- | ESS 2-10 |

Renewals

| | |
|--|----------|
| Limited Engineer License Renewal ----- | ESS 2-11 |
|--|----------|

QUICK REFERENCE - LIMITED ENGINEER LICENSES (HORSEPOWER / TONNAGE)

ASSISTANT ENGINEER LIMITED and DESIGNATED DUTY ENGINEER - UNLIMITED HP

| <u>SUBJECT</u> | MODULE CODE |
|--|--------------------|
| General Subjects | 611--XX |
| Motor Plants | 612--XX |
| Engineering Safety & Environmental Protection | 613--XX |
| Electricity | 614--XX |

CHIEF ENGINEER - LIMITED

| <u>SUBJECT</u> | C/E Oceans MODULE CODE | C/E Near Coastal MODULE CODE |
|--|-----------------------------------|---|
| General Subjects | 607--XX | 601--XX |
| Motor Plants | 608--XX | 602--XX |
| Engineering Safety & Environmental Protection | 609--XX | 603--XX |
| Electricity - Oceans | 605--XX | |
| Electricity - Near Coastal | | 604--XX |

CHIEF ENGINEER AND ENGINEER - OFFSHORE SUPPLY VESSELS

| <u>SUBJECT</u> | Chief Engineer (OSV) MODULE CODE | Engineer (OSV) MODULE CODE |
|--|---|---------------------------------------|
| General Subjects | 701--XX | 711--XX |
| Motor Plants | 702--XX | 712--XX |
| Engineering Safety & Environmental Protection | 703--XX | 713--XX |
| Electricity | 704--XX | 714--XX |
| Survival Craft | 706--XX | 706--XX |

DESIGNATED DUTY ENGINEER – LIMITED

| <u>SUBJECT</u> | DDE UNLIMITED HP MODULE CODE | DDE-1000/4000 HP MODULE CODE |
|--|---|---|
| General Subjects | 611--XX | 691--XX |
| Motor Plants | 612--XX | 692--XX |
| Engineering Safety & Environmental Protection | 613--XX | 693--XX |
| Electricity | 614--XX | |

UNINSPECTED FISHING INDUSTRY VESSEL - CHIEF AND ASSISTANT ENGINEER

| <u>SUBJECT</u> | CHIEF ENGINEER MODULE CODE | ASSISTANT ENGINEER MODULE CODE |
|--|---------------------------------------|---|
| General Subjects | 651--XX | 661--XX |
| Motor Plants | 652--XX | 662--XX |
| Engineering Safety & Environmental Protection | 653--XX | 663--XX |

| | | | |
|--|---|---|-------------------|
| EXAMINATION STRUCTURE SHEET NO. 2-1 | License Type - License Group License Action | ASSISTANT ENGINEER / DDE UNLIMITED HP LIMITED ORIGINAL | EXAM CODE 61CR |
| NO. OF MODULES: Four (4) MODULE PRESENTATION ORDER: | NUMBER OF QUESTIONS | MINIMUM SCORE | |
| 611--, General Subjects | 70 | 70 | |
| 612--, Motor Plants | 70 | 70 | |
| 613--, Engineering Safety & Environmental Protection | 70 | 70 | |
| 614--, Electricity | 70 | 70 | |

Remarks: After January 31, 2002 each applicant for a Limited Assistant Engineer / DDE Unlimited HP license and a STCW 95 certificate must complete all modules above to be issued a license.

| | | | |
|--|---|---|-------------------|
| EXAMINATION STRUCTURE SHEET NO. 2-2 | License Type License Group License Action | CHIEF ENGINEER LIMITED - NEAR COASTAL RAISE IN GRADE | EXAM CODE 60CR |
| NO. OF MODULES: Four (4) MODULE PRESENTATION ORDER: | NUMBER OF QUESTIONS | MINIMUM SCORE | |
| 601--, General Subjects | 70 | 70 | |
| 602--, Motor Plants | 70 | 70 | |
| 603--, Engineering Safety & Environmental Protection | 70 | 70 | |
| 604--, Electricity | 70 | 70 | |

Remarks: If candidate is evaluated as being qualified for steam propulsion at the limited level, they are to be examined by steam propulsion modules 526XX Steam Part I and 527XX Steam Part II in addition to the modules indicated above.

| | | | |
|--|---|---|--------------------------|
| EXAMINATION STRUCTURE SHEET NO. 2-3 | License Type License Group License Action | CHIEF ENGINEER LIMITED - OCEANS RAISE IN GRADE | EXAM CODE 60AR |
| NO. OF MODULES: Four (4) MODULE PRESENTATION ORDER: | | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 607--, General Subjects | | 70 | 70 |
| 608--, Motor Plants | | 70 | 70 |
| 609--, Engineering Safety & Environmental Protection | | 70 | 70 |
| 605--, Electricity and Electronics | | 70 | 70 |

1. If candidate is evaluated as being qualified for steam propulsion at the limited level, they are to be examined by steam propulsion modules 526XX Steam Part I and 527XX Steam Part II in addition to the modules indicated above.
2. Applicants raising grade from Chief Engineer-Near Coastal to Chief Engineer-Oceans, are required to successfully complete the above modules.

| | | | |
|--|--|--|--------------------------|
| EXAMINATION STRUCTURE SHEET No. 2-4 | License Type License Group License Action License Condition | ENGINEER LIMITED ORIGINAL OSV | EXAM CODE 71CC |
| NO. OF MODULES: Five (5) MODULE PRESENTATION ORDER: | | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 711--, General Subjects | | 70 | 70 |
| 712--, Motor Plants | | 70 | 70 |
| 713--, Engineering Safety & Environmental Protection | | 70 | 70 |
| 714--, Electricity | | 70 | 70 |
| 706--, Survival Craft ^{1, 2} | | 50 | 70 |

Remarks:

1. Each candidate for an engineer OSV license must complete module 706XX if they have not previously completed the assessment of practical skills OR completed an approved course of training on personal survival craft.
2. When an approved course on proficiency in survival craft has not covered the topics or practical demonstration for lifeboats, the endorsement will indicate "Limited to service on vessels not equipped with lifeboats".

| | | | |
|--|--|--|--------------------------|
| EXAMINATION STRUCTURE SHEET No. 2-5 | License Type - License Group - License Action - License Condition - | CHIEF ENGINEER LIMITED- NEAR COASTAL, DOMESTIC ORIGINAL OSV - LESS THAN 4000 HP | EXAM CODE 70CC |
| NO. OF MODULES: Five (5) MODULE PRESENTATION ORDER: | | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 711--, General Subjects | | 70 | 70 |
| 712--, Motor Plants | | 70 | 70 |
| 713--, Engineering Safety & Environmental Protection | | 70 | 70 |
| 714--, Electricity | | 70 | 70 |
| 706--, Survival Craft ^{1, 2} | | 50 | 70 |

Remarks:

1. Each candidate for an engineer OSV license must complete module 706XX if they have not previously completed the assessment of practical skills OR completed an approved course of training on personal survival craft.
2. When an approved course on proficiency in survival craft has not covered the topics or practical demonstration for lifeboats, the endorsement will indicate "Limited to service on vessels not equipped with lifeboats".

| | | | |
|--|--|--|--------------------------|
| EXAMINATION STRUCTURE SHEET No. 2-6 | License Type - License Group - License Action - License Condition - | CHIEF ENGINEER LIMITED RAISE IN GRADE OSV | EXAM CODE 70CF |
| NO. OF MODULES: Five (5) MODULE PRESENTATION ORDER: | | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 701--, General Subjects | | 70 | 70 |
| 702--, Motor Plants | | 70 | 70 |
| 703--, Engineering Safety & Environmental Protection | | 70 | 70 |
| 704--, Electricity | | 70 | 70 |
| 706--, Survival Craft ^{1, 2} | | 50 | 70 |

Remarks:

1. Each candidate for an engineer OSV license must complete module 706XX if they have not previously completed the assessment of practical skills OR completed an approved course of training on personal survival craft.
2. When an approved course on proficiency in survival craft has not covered the topics or practical demonstration for lifeboats, the endorsement will indicate "Limited to service on vessels not equipped with lifeboats".

| | | |
|---|---|--------------------------|
| EXAMINATION STRUCTURE SHEET NO. 2-7 | License Type - DESIGNATED DUTY ENGINEER 1000/4000 HP License Group LIMITED License Action ORIGINAL | EXAM CODE 69CR |
| NO. OF MODULES: Three (3) MODULE PRESENTATION ORDER: | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 691--, General Subjects | 50 | 70 |
| 692--, Motor Plants | 50 | 70 |
| 693--, Engineering Safety & Environmental Protection | 50 | 70 |

| | | |
|--|---|--------------------------|
| EXAMINATION STRUCTURE SHEET NO. 2-8 | License Type DESIGNATED DUTY ENGINEER UNLIMITED HP License Group LIMITED License Action ORIGINAL & UPGRADE | EXAM CODE 61CR |
| NO. OF MODULES: Four (4) MODULE PRESENTATION ORDER: | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 611--, General Subjects | 70 | 70 |
| 612--, Motor Plants | 70 | 70 |
| 613--, Engineering Safety & Environmental Protection | 70 | 70 |
| 614--, Electricity | 70 | 70 |

Remarks: After January 31, 2002 each applicant for a Limited Assistant Engineer / DDE Unlimited HP license and a STCW 95 certificate must complete all modules above to be issued a license.

| | | | |
|---|--|---|--------------------------|
| EXAMINATION STRUCTURE SHEET No. 2-9 | License Type - License Group - License Action - License Condition - | ASSISTANT ENGINEER LIMITED ORIGINAL UNINSPECTED FISHING INDUSTRY VESSELS | EXAM CODE 66CF |
| NO. OF MODULES: Three (3) MODULE PRESENTATION ORDER: | | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 661--, General Subjects | | 50 | 70 |
| 662--, Motor Plants | | 50 | 70 |
| 663--, Engineering Safety & Environmental Protection | | 50 | 70 |

| | | | |
|---|--|---|--------------------------|
| EXAMINATION STRUCTURE SHEET NO. 2-10 | License Type License Group License Action License Condition | CHIEF ENGINEER LIMITED RAISE IN GRADE UNINSPECTED FISHING INDUSTRY VESSELS | EXAM CODE 65CF |
| NO. OF MODULES: Three (3) MODULE PRESENTATION ORDER: | | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 651--, General Subjects | | 70 | 70 |
| 652--, Motor Plants | | 70 | 70 |
| 653--, Engineering Safety & Environmental Protection | | 70 | 70 |

| | | | |
|--|---|--|--------------------------|
| EXAMINATION STRUCTURE SHEET NO. 2-11 | License Type License Group License Action | ENGINEERING (RENEWAL) LIMITED RENEWAL | EXAM CODE 61AI |
| NO. OF MODULES: One (1); | | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 617--, Limited Renewal Exercise. | | 70 | 90 |

Remarks: The renewal exercise is open book and the minimum passing score is 90%.

SECTION THREE

MOBILE OFFSHORE DRILLING UNIT

ENGINEERING LICENSES

EXAMINATION STRUCTURE SHEETS

ASSISTANT ENGINEER (MODU)

CHIEF ENGINEER (MODU)

INTRODUCTION

MODU EXAMINATIONS

1. TIME OF EXAMINATION AND GRADING POLICY

A time limit of 3½ hours may be provided to each applicant to complete a test module except as necessary to accommodate the working hours of the examination room. Applicants starting to test in the morning, at the opening of the exam room, must complete a minimum of two modules that day and may complete more if they desire and time permits. Applicants starting a module late in the afternoon should be advised that it must be completed by the normal closing time; unanswered questions will be treated as wrong answers. An applicant for a Mobile Offshore Drilling Unit (MODU) engineer's license must complete the entire exam on consecutive business days. Modules should be administered in the published order. A minimum score of 70% is required to pass all modules. All examination modules are graded separately. The renewal exercise module requires a minimum score of 90% to pass.

2. EXAMINATION CYCLES

Subject to the requirements of paragraph 1, the examination cycle may begin on any business day and at anytime during the day as designated by the SIP.

3. RENEWAL EXERCISE

The renewal exercises for chief and assistant Engineers (MODU) have been consolidated into one open book exercise.

4. REFERENCE MATERIAL

Engineering exam illustrations will be provided at the back of each exam module booklet. With the exception of providing the regulations, 46 CFR Parts 1-199 and 33 CFR Parts 1-199, no other reference materials are permitted except for the open book renewal exercise. Only non-programmable calculators are permitted.

5. QUESTIONS

Any questions should be referred to the National Maritime Center, Examination Administration Branch, Engineering Team, at (202) 493-1046.

| | | |
|---|--|----------------------|
| EXAMINATION STRUCTURE SHEET NO. 3-1 | License Type - ASSISTANT ENGINEER - MODU License Group - ORIGINAL | EXAM CODE 63FO |
| NO. OF MODULES: Three (3) MODULE PRESENTATION ORDER: | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 631--, General Subjects | 50 | 70 |
| 632--, Auxiliary Machinery | 50 | 70 |
| 633--, Engineering Safety & Environmental Protection | 50 | 70 |

| | | |
|---|--|----------------------|
| EXAMINATION STRUCTURE SHEET NO. 3-2 | License Type - CHIEF ENGINEER - MODU License Group - RAISE IN GRADE | EXAM CODE 62ER |
| NO. OF MODULES: Three (3) MODULE PRESENTATION ORDER: | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 621--, General Subjects | 70 | 70 |
| 622--, Auxiliary Machinery | 70 | 70 |
| 623--, Engineering Safety & Environmental Protection | 70 | 70 |

| | | |
|---|--|----------------------|
| EXAMINATION STRUCTURE SHEET No. 3-3 | License Type - ENGINEERING (RENEWAL) License Group - MODU - CHIEF AND ASSISTANT | EXAM CODE 63EN |
| NO. OF MODULES: One (1) MODULE PRESENTATION ORDER: | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 634--, MODU Renewal Exercise | 50 | 90 |

Remarks:

1. MODU Chief and Assistant Engineer use the same renewal exercise, which is "open book" and may be completed by mail.
2. Each applicant should be given one attempt to correct missed questions. If unsuccessful at obtaining a passing score after reviewing the missed questions, the applicant should be given a different version of the test and the process repeated.
3. A Coast Guard approved course may be accepted in lieu of the MODU renewal exercise.
4. A certificate of course completion, when used in lieu of an examination exercise, must be presented when application is made, and a copy of the certificate shall be retained with the renewal application.
5. The completed course, when used in lieu of an examination exercise, may only be recognized for obtaining this license and may not be used for any other license, endorsement or recency of sea service.

SECTION FOUR
UNLICENSED RATINGS
ENGINEERING EXAMINATIONS
EXAMINATION STRUCTURE SHEETS

GENERAL SAFETY

JUNIOR ENGINEER

DECK ENGINEER

ELECTRICIAN

REFRIGERATING ENGINEER

MACHINIST

OILER

FIREMAN/WATERTENDER

PUMPMAN

OILER, MINERAL & OIL

QMED RENEWAL EXERCISE

INTRODUCTION

UNLICENSED RATING ENGINEERING EXAMINATIONS

1. TIME OF EXAMINATION AND GRADING POLICY

A time limit of 3½ hours may be provided to each applicant to complete a test module except as necessary to accommodate the working hours of the examination room. An applicant may test for as many ratings for which they are qualified, however, they must pass the General Safety module before taking any of the unlicensed rating modules. An applicant starting to test in the morning, at the opening of the exam room, should complete a minimum of two modules that day when two or more test modules are required. They may complete more than two if they desire and time permits. Applicants starting a module late in the afternoon should be advised that it must be completed by the normal closing time; unanswered questions will be treated as wrong answers. An applicant testing in three or more modules must complete all exam modules on consecutive business days once testing has started. A minimum score of 70% is required to pass each module except for the renewal exercise which requires a 90% to pass. All modules are graded separately.

2. EXAMINATION CYCLES

Subject to the requirements of paragraph 1, the examination cycle may begin on any business day, and at anytime during the day as designated by the SIP.

3. REFERENCE MATERIAL

Engineering exam illustrations will be provided at the back of each exam module booklet. With the exception of providing the regulations, 46 CFR Parts 1-199 and 33 CFR Parts 1-199, no other reference materials are permitted except for the open book renewal exercise. Only non-programmable calculators are permitted.

4. QUESTIONS

Any questions should be referred to the National Maritime Center, Examination Administration Branch, Engineering Team, at (202) 493-1046.

| | | |
|---|--|----------------------|
| EXAMINATION STRUCTURE SHEET NO. 4-1 | License Type - JUNIOR ENGINEER License Group - UNLICENSED RATINGS | EXAM CODE 81UU |
| NO. OF MODULES: Two (2) MODULE PRESENTATION ORDER: | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 80--, General Safety | 50 | 70 |
| 81--, Junior Engineer | 50 | 70 |

| | | |
|---|--|----------------------|
| EXAMINATION STRUCTURE SHEET NO. 4-2 | License Type - DECK ENGINEER License Group - UNLICENSED RATINGS | EXAM CODE 82UU |
| NO. OF MODULES: Two (2) MODULE PRESENTATION ORDER: | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 80--, General Safety | 50 | 70 |
| 82--, Deck Engineer | 50 | 70 |

| | | |
|---|--|----------------------|
| EXAMINATION STRUCTURE SHEET NO. 4-3 | License Type - ELECTRICIAN License Group - UNLICENSED RATINGS | EXAM CODE 83UU |
| NO. OF MODULES: Two (2) MODULE PRESENTATION ORDER: | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 80--, General Safety | 50 | 70 |
| 83--, Electrician | 50 | 70 |

Remarks: The General Safety module is to be administered first and must be successfully completed before any specific unlicensed rating module can be administered. Successful completion of the General Safety module is valid for 12 months and need not be retaken for additional unlicensed ratings during this period.

| | | |
|---|---|----------------------|
| EXAMINATION STRUCTURE SHEET NO. 4-4 | License Type - REFRIGERATING ENGINEER License Group - UNLICENSED RATINGS | EXAM CODE 84UU |
| NO. OF MODULES: Two (2) MODULE PRESENTATION ORDER: | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 80--, General Safety | 50 | 70 |
| 84--, Refrigerating Engineer | 50 | 70 |

| | | |
|---|---|----------------------|
| EXAMINATION STRUCTURE SHEET NO. 4-5 | License Type - MACHINIST License Group- UNLICENSED RATINGS | EXAM CODE 85UU |
| NO. OF MODULES: Two (2) MODULE PRESENTATION ORDER: | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 80--, General Safety | 50 | 70 |
| 85--, Machinist | 50 | 70 |

| | | |
|---|---|----------------------|
| EXAMINATION STRUCTURE SHEET NO. 4-6 | License Type - FIREMAN/WATERTENDER License Group- UNLICENSED RATINGS | EXAM CODE 86UU |
| NO. OF MODULES: Two (2) MODULE PRESENTATION ORDER: | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 80--, General Safety | 50 | 70 |
| 86--, Fireman Watertender | 50 | 70 |

Remarks: The General Safety module is to be administered first and must be successfully completed before any specific unlicensed rating module can be administered. Successful completion of the General Safety module is valid for 12 months and need not be retaken for additional unlicensed ratings during this period.

| | | |
|---|--|----------------------|
| EXAMINATION STRUCTURE SHEET NO. 4-7 | License Type - OILER License Group - UNLICENSED RATINGS | EXAM CODE 87UU |
| NO. OF MODULES: Two (2) MODULE PRESENTATION ORDER: | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 80--, General Safety | 50 | 70 |
| 87--, Oiler (Steam and Motor) | 50 | 70 |

| | | |
|---|--|----------------------|
| EXAMINATION STRUCTURE SHEET NO. 4-8 | License Type - PUMPMAN License Group - UNLICENSED RATINGS | EXAM CODE 88UU |
| NO. OF MODULES: Two (2) MODULE PRESENTATION ORDER: | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 80--, General Safety | 50 | 70 |
| 88--, Pumpman | 50 | 70 |

| | | |
|---|---|----------------------|
| EXAMINATION STRUCTURE SHEET NO. 4-9 | License Type – OILER-MOTOR VESSELS - LIMITED License Group- UNLICENSED RATINGS | EXAM CODE 89UU |
| NO. OF MODULES: Two (2) MODULE PRESENTATION ORDER: | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 80--, General Safety ¹ | 50 | 70 |
| 89--, Oiler - Mineral and Oil ² | 50 | 70 |

Remarks:

1. The General Safety module is to be administered first and must be successfully completed before specific ratings modules for unlicensed ratings can be administered. Successful completion of the General Safety module is valid for 12 months and need not be retaken for additional unlicensed ratings during this period.
2. Each applicant for a QMED - Oiler endorsement where service has been obtained on motor propelled vessels of less than 1600 GT (without auxiliary and/or waste heat boilers) should be administered exam module 89XXX in place of module 87XXX.

| | | | |
|---|--|--------------------------------|----------------------|
| EXAMINATION License Type - RENEWAL STRUCTURE License Group - UNLICENSED RATINGS SHEET NO. 4-10 | | | EXAM CODE 90UU |
| NO. OF MODULES: One (1) MODULE PRESENTATION ORDER: | | NUMBER OF QUESTIONS | MINIMUM SCORE |
| 900--, Renewal Exercise | | 70 | 90 |

Remarks: The Renewal Exercise is open book and is to be administered for those QMEDs who have not maintained recency of sea service.

APPENDIX

LIFEBOATMAN PRACTICAL DEMONSTRATION

| | | |
|------------|--|--|
| APPENDIX I | LIFEBOATMAN PRACTICAL DEMONSTRATION | |
|------------|--|--|

46 CFR 12.10-5(a) requires applicants for certificates or endorsement as lifeboatman to demonstrate their ability to carry out effectively all the duties that may be required of a lifeboatman. They must demonstrate that the training they have received has been effective in all operations connected with the launching of lifeboats, liferafts, and other survival craft; that they can understand and carry out the usual orders given, in English, incident to launching and recovery of survival craft; that they can demonstrate the practical skills in the handling of lifeboats and the use of oars; and that they are capable of taking command of the crew of a lifeboat or survival craft.

1. **REC responsibilities.** Applicants for lifeboatman and not having completed an approved course are to be administered the appropriate written examination. For applicants needing to perform and be assessed in skill demonstrations, personnel in the REC should not be required to conduct these assessments unless the full scale equipment and the assistance of knowledgeable active duty or reserve BM or QM is available to observe the demonstration. As an alternative you may accept a Letter of Proficiency similar to the one shown on page 5-3. Applicants may only use one-quarter scale models to describe or identify components of a lifeboat provided in PART I, page 5-10 . Only actual equipment may be used to demonstrate the proficiencies listed in PARTS II and III in the use of survival craft. The services of a boat crew are required in PART II to demonstrate ability to handle a lifeboat and command a crew underway which are typically not available at all REC's.
2. **Procedures to be followed:**
 - (a) **PART I – COMPONENT IDENTIFICATION.** Applicants must identify the equipment used in lifeboats and other survival craft. Ideally this will be done using the actual equipment. They should describe under what circumstances and in which craft the equipment would be found, the method in which it is used, and any special precautions regarding its construction or use. For the purpose of standardization award one point for identification and one point for description as per the checklist provided. Time allowed 30 minutes. Applicant must accumulate a minimum of 70 points to demonstrate proficiency.
 - (b) **PART II – PROCEDURES.** The applicant must be assessed as to their proficient performance of the skills involved in the launching, handling and recovering of a lifeboat (PARTS II-1, II-2 and II-3). The processes shown in Column A are to be compared to the standards provided in the checklist on pages 5-11 through 5-16. Time allowed is 60 minutes.
 - (c) **PART III - PROCEDURES.** An applicant for Lifeboatman or Lifeboatman Limited must demonstrate the procedural steps involved in the launching, righting and boarding of liferafts. An applicant for lifeboatman limited to vessels not equipped with lifeboats must have successfully completed engineering module 706XX, Survival Craft and have demonstrated the ability to launch and board a liferaft. Time allowed is 30 minutes.

LIFEBOATMAN
PRACTICAL DEMONSTRATION

The forms on pages 5-11 and 5-12 appear in NMC Policy Letter 08-01, as pages 13 and 15, and are to be completed when candidate has been assessed in their performance of skills on board a vessel on lifeboat proficiency.

| | |
|--|--|
| LIFEBOATMAN PRACTICAL DEMONSTRATION | PART I – COMPONENT IDENTIFICATION |
|--|--|

Reference: 46 CFR 199.175

| <u>COMPONENT</u> | <u>POINTS</u> | <u>COMPONENT</u> | <u>POINTS</u> |
|---------------------|---------------|-----------------------------|---------------|
| Bailer | | Provisions | |
| Bilge pump | | Pump | |
| Boathook | | Radar reflector | |
| Bucket | | Rainwater collection device | |
| Can Opener | | Repair kit | |
| Compass | | Sea anchor | |
| Dipper | | Searchlight | |
| Drinking Cup | | Seasickness kit | |
| Fire extinguisher | | Signal, smoke | |
| First aid kit | | Signal, hand flare | |
| Flashlight | | Signal, parachute flare | |
| Hatchet | | Skates and fenders | |
| Heaving Line | | Sponge | |
| Instruction card | | Survival instructions | |
| Jackknife | | Table of lifesaving signals | |
| Knife (non-folding) | | Thermal protective aids | |
| Ladder | | Tool kit | |
| Mirror, signaling | | Towline | |
| Oars/Paddles | | Water | |
| Painters | | Whistle | |

LIFEBOATMAN PRACTICAL DEMONSTRATION

PART II-1 - PROCEDURES

Applicants shall demonstrate their ability to prepare and safely launch survival craft and clear the ship's side quickly; give the correct commands for launching and boarding survival craft, clear the ship and handling and disembarking persons from survival craft. These checklists represent one set of assessment criteria for determining the success of these performance demonstrations. Others may be used such as those enclosed with NMC Policy Letter 08-01.

LIFEBOAT LAUNCH PROCEDURES - PART II-1

| <p>Applicant performs or describes in detail the steps involved in lowering and launching of a lifeboat from gravity type davits. Applicant must answer at least forty (40) of the steps listed in this column in order to be asked the questions in column B for the steps omitted in column A. If an applicant fails to initially describe forty (40) steps in column A, it is a failure.</p> | A | <p>Questions for the Examiner to ask an applicant for a step he has failed to include in column A. If an applicant correctly answers a question for a step he omitted give him credit in column B. The total of the credits in column A and B of Parts II-1 and II-3 combined is the finale score. Seventy (70) points is the passing grade. (For further information see NMC Policy Letter 08-01).</p> | B |
|---|----------|---|----------|
| Muster the crew. | | How do you know everyone assigned is present? | |
| Ensure that each crewmember knows their duties. | | How do you know the crew is trained? Where are the duties of the crew listed? | |
| Ensure crew and passengers are protectively dressed. | | How should persons who are preparing to abandon ship be dressed? | |
| Ensure crew and passengers have properly donned lifejackets and immersion suits. | | Where are immersion suits not required? (32N to 32S) | |
| Ensure lifejackets and immersion suits have proper equipment in good working order. | | What should be attached to lifejackets and immersion suits to attract attention? | |
| Check vessel list to determine if the lifeboat can be launched | | What can prevent the lifeboat from being launched? | |
| Remove lifeboat stowage cover and strongback. Stow clear of launch and debarkation area. | | What protects the interior of a stowed lifeboat? | |
| Ensure tricing pendants properly rigged and secure. | | How should the trip lines on the McCluney hooks be led? | |
| Ensure Rottmer release gear handle pinned in closed position and has clear path to open. | | What prevents accidental release of the lifeboat from the falls? | |
| Ensure boat drain cap in place and secure. | | How is water prevented from entering the boat through its drain? | |

| (continued) LIFEBOAT LAUNCH PROCEDURES - PART II-1 | | | |
|--|----------|---|----------|
| | A | | B |
| Ensure that davit tracks are clear. | | What should be checked prior to lowering to prevent the davit arm wheels from jamming? | |
| Release manropes (lifelines) and ensure they will run free as boat lowers. | | What is provided to protect the occupants in case the boat was to fall unexpectedly? | |
| Ship rudder and/or tiller. | | What is a sweep oar? | |
| Have sea painter led out, made fast forward as close to water as possible, with all slack removed. | | How do you ensure the waterborne boat will lay alongside at the embarkation station? | |
| Ensure painter properly led inboard of forward falls, outboard of everything else. | | What could cause the sea painter to foul during the launch process? | |
| Ensure sea painter is properly made fast to forward inboard thwart. | | Where is the sea painter made fast in the boat? | |
| Ensure toggle pin has a clear release path and releases into boat. | | How do you ensure a “clean” release of the sea painter when so ordered? | |
| Ensure everyone is out of boat. | | How do you prevent injury to occupants while lowering the boat to the embarkation deck? | |
| Have gripes released, removed, and stowed clear of launch and embarkation areas. | | What happens to the gripes after they are released? | |
| Ensure locking bar swung clear of track. | | What fitting or part locks the boat in the stowed position? | |
| Have embarkation ladder made ready for use. Remove cover. Ensure made fast to deck. | | How will the winch operator get off the ship? | |
| Ensure no personnel or other obstruction in lowering path. | | What should be checked prior to lowering to prevent damage to the boat or injury to people on deck? | |
| Have lifeboat lowered at a steady speed to the embarkation deck. | | What speed should be used when lowering the lifeboat? | |
| Ensure strain on tricing pendants just enough to hold boat securely alongside at embark deck. | | What happens if you continue to try to lower the boat past the embarkation deck? | |
| Have frapping lines passed. | | What helps to prevent occupants from being thrown from the boat when the tricing pendants are released? | |
| Order crew and passengers into the boat. | | How should load be distributed in boat? | |

| (continued) LIFEBOAT LAUNCH PROCEDURES - PART II-1 | | | |
|---|----------|--|----------|
| | A | | B |
| Order everyone to be seated, using manropes. | | What should occupants do while the boat is being lowered? | |
| Have tricing pendants released. | | What happens if you continue to lower the boat below the embarkation deck? | |
| Have frapping lines eased out slightly. | | What keeps the boat from swinging while being lowered? | |
| Order boat lowered. | | What speed should be used in lowering the boat? | |
| When safely waterborne order boat released. | | Ideally, when should boat be released? (crest of wave or swell) | |
| Order engine started or oars deployed. | | What should be checked immediately after starting engine? (cooling water flow) What is Fleming gear? | |
| Shove off. | | How do you get the boat heading away from the ship's side? (use boathook not hands) | |
| Swing clear of ship. | | If vessel has way on what helps boat sheer away from ship? | |
| Release sea painter. | | What should you do once the boat has swung clear of the ship's side? | |
| Look for, and assist, survivors. | | What should you look for once safely clear of ship? | |
| Join other boats. | | What helps aircraft sight vessel survivors? | |

| | |
|--|---------------------------------|
| LIFEBOATMAN PRACTICAL DEMONSTRATION | PART II-2 – OAR COMMANDS |
|--|---------------------------------|

Ref: American Merchant Seaman's Manual

| <u>COMMAND</u> | <u>MEANING</u> | <u>DEMONSTRATED CORRECTLY</u> |
|--|--|--|
| STAND BY THE OARS | Each crewmember clears oar, ships rowlock, places blade flat, on gunwale forward, inboard of person in front of them. | |
| SHOVE OFF | Inboard bowman pushes off using boathook. When ordered bowman releases sea painter. | |
| OUT OARS | Place oars in rowlocks directly from the boated position or from "Stand By The Oars" position. Oars horizontal, at right angles to keel, blades flat. | |
| GIVE WAY TOGETHER | Blades of oars are swung forward and dipped into the water. At the command, "Together", the stroke is started. At the end of the stroke, blades are feathered, swung forward, and another stroke is started. | |
| HOLD WATER | Complete the stroke, stop rowing, drop blade into water vertically, and gradually swing to a position at right angles to the keel, taking care not to overstress rowlock. | |
| PORT (STARBOARD) HOLD WATER | Used to turn boat more quickly. Ordered side completes stroke and holds water, other side continues to row. With boat stopped can be used with "Give Way" command to opposite side to turn boat while gathering minimal headway. | |
| STERN ALL | When rowing ahead, complete the stroke, and then commence to backwater, gradually increasing the depth of the blades. | |
| BACK WATER | Row in the astern direction. | |
| OARS | Complete the stroke, stop rowing, and bring the oars horizontal, at right angles to the keel, with the blades held flat. | |
| TRAIL OARS | Complete stroke and carefully allow oar to trail alongside, fore and aft. | |
| BANK OARS | Given from the "Oars" position. Allows oarsmen to rest when laying to. Oars drawn through the rowlock and rested on opposite gunwale. | |
| IN BOWS | The bowmen complete the stroke, swing their oars forward, and boat them. They then stand by with boat hooks to fend off or receive a line. | |
| WAY ENOUGH | Given when approaching a landing. Complete stroke, toss oars to about 45 degrees and boat the oars, forward oars first, unship the rowlocks. | |
| BOAT THE OARS | From "Oars" or "Toss Oars", place the oars in the boat on side thwart, blades forward. | |

LIFEBOAT RECOVERY PROCEDURES - PART II-3

| Applicant performs or describes in detail the steps involved in the recovery of a lifeboat with gravity type davits (see heading for Part II-1 for grading procedure). | A | Questions to assist the Examiner in assessing the applicant's competence when they have failed to include an item in Column "A" | B |
|--|---|---|---|
| Request and receive permission to come alongside. | | How do you communicate with the ship from a lifeboat? What is signal to recover boat? | |
| Inspect Rottmer release gear for free rotation. | | When do you close and lock Rottmer gear? | |
| Come alongside slightly forward of falls. | | To what position should you aim during your approach to the ship? | |
| Retrieve and secure sea painter to thwart. | | How is the boat secured to the ship? | |
| Maneuver into position under the davit heads. | | Where does the sea painter position the boat? | |
| Have the frapping lines eased out. | | What keeps the falls clear as boat maneuvers into position alongside | |
| Have hooks engaged. | | How are hooks lowered? | |
| Have releasing gear secured. | | What prevents accidental release of hooks? | |
| Have boat raised to just short of davit head. | | How high is boat raised? Why? | |
| Have tricing pendants rigged. | | What prevents a Pelican hook from opening accidentally? | |
| Have boat lowered to embarkation deck. | | How is boat brought alongside at embarkation deck? | |
| Order occupants to disembark. | | How could occupants disembark from boat prior to raising? | |
| Have cap removed from drain. Have automatic drain ball checked for free flow of water. | | How do remove standing water from boat? | |
| Stow frapping lines. | | What do you do with the frapping lines? | |
| Have tracks and travel path checked for obstructions. | | What should be done prior to raising boat to prevent jamming while raising? | |
| Have boat raised. | | At what speed should the boat be raised? | |
| Have limit switch operation checked. | | What automatic device prevents the boat from being raised too far? | |
| Have boat raised until about 12 inches short of the mechanical stops or stowed position. | | Where are the inboard ends of gripes secured? | |
| Secure power to the winch. | | When should power to the winch be secured? | |
| Hand crank winch to mechanical stops. | | What safety feature prevents injury if power down activated while hand raising the boat? | |
| Connect and tighten gripes and locking bar. | | What prevents a secured boat from lowering? | |
| Lower boat until it rests on keel. | | Does a fully raised boat rest on its keel? | |
| Have all gear properly stowed in boat. | | What should be done with the boat's gear? | |

LIFERAFT LAUNCH PROCEDURES - PART III

| Applicant performs or describes in detail the steps involved in launching and boarding an inflatable liferaft. Applicant must describe at least ten (10) steps correctly in order to be asked the questions from part B for the omitted steps. | A | Questions for the examiner to ask an applicant for a step he has failed to include in column A. If an applicant correctly answers a question for a step he omitted give him credit in column B. The total of the combined credits in columns A and B is the final score. Each credit is worth five percentage points(Seventy 70 percent is the passing grade). | B |
|---|----------|---|----------|
| Muster crew and passengers at raft. | | How do you know everyone assigned to the craft is present? | |
| Ensure everyone knows duties. | | Where are survival craft assignments and duties listed? | |
| Ensure every one dressed properly. | | Describe what people should and should not be wearing or carrying. | |
| Secure painter directly to vessel. | | Why is a cleat installed in the vicinity of the liferaft station? | |
| Have strap released that secures raft to cradle. | | Describe the different methods of releasing a liferaft from its cradle. | |
| Have raft container carried to launch point. | | How many crewmembers does it take to safely carry and launch a liferaft? | |
| Check for obstructions below. | | What do you check immediately prior to launching the liferaft? | |
| Have raft thrown into water. | | What equipment is used to launch the liferaft? | |
| Have painter pulled out to end. | | How do you inflate a liferaft? | |
| Have painter pulled sharply to inflate raft. | | How long does it take for the liferaft to inflate? | |
| Have crew and passengers board raft. | | Describe the different methods of boarding a raft. | |
| Have crewmember right inverted raft. | | What do you do in the raft inflates in the inverted position? How do you hold on to the raft while trying to right it? | |
| Have painter cut to releases. | | How do you cast off the painter? | |
| Have raft paddled clear of vessel. | | How do you propel the raft clear of the vessel? | |
| Look for, and assist, survivors. | | What should you do once safely clear of the vessel's side? | |
| Have sea anchor deployed. | | What keeps the raft from drifting downwind? | |
| Ensure liferaft interior has adequate ventilation. | | Should you seal up all openings to preserve warmth? | |
| Have double bottom inflated. | | How do you prevent heat from escaping to the seawater? How do you inflate doublebottom? | |
| Have all rafts lashed together. | | What helps searchers spot waterborne survivors from the air? | |
| Assign watchstanding and other duties. | | What duties should be assigned to occupants? | |

RECORD OF QUALIFYING SEA SERVICE

This record of the sea service acquired by _____, MMD no. _____, will be used to qualify for a lifeboatman's endorsement or certification as proficient in survival craft. It should be signed by the mariner's department head indicating the dates of service, and the number of abandon ship drills in which the mariner participated.

| VESSEL | ROUTE¹ | SIGNED ON/ DISCHARGED | DATES OF ABANDON SHIP DRILLS² | DATES BOAT LOWERED TO WATER AND CREW EXERCISED³ | SIGNATURE (Include MMD no.) |
|---------------|--------------------------|----------------------------------|---|---|--|
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- Notes: 1. Insert O for ocean routes; NC for near coastal routes; GL for Great Lakes routes; LBS for other lakes and bays or sounds.
 2. Only include dates where the crew was instructed in abandon ship procedures and the launching and handling of survival craft
 3. Only include a date in this column if the mariner served as member of the boat crew that was exercised at oars, otherwise insert NA.

RECORD OF COMPLETION OF PRACTICAL ASSESSMENTS TO QUALIFY AS A LIFEBOATMAN AND AS PROFICIENT IN SURVIVAL CRAFT

This checklist conveniently groups the STCW's competencies and the supporting knowledge, understandings, and proficiencies that apply to certification as proficient in survival craft and to issuance of a lifeboatman certification. Assessors who witness the successful demonstration of a mariner's competency, performed in accordance with the assessment standards, should sign the appropriate line in this checklist, print their name, and include their license number.

MARINER'S NAME _____ MMD NO. _____

| <i>STCW COMPETENCY</i> | <i>DATE</i> | <i>VESSEL/ TRAINING FACILITY</i> | <i>SIGNATURE/LIC. NO.*</i> |
|---|--------------------|---|-----------------------------------|
| <i>LAUNCHING AND RECOVERY OF LIFEBOATS</i> | | | |
| <i>1. Command launching the lifeboat</i> | | | |
| <i>2. Prepare and safely launch a lifeboat</i> | | | |
| <i>3. Safely recover a lifeboat</i> | | | |
| <i>4. Start and operate a lifeboat's engine</i> | | | |
| <i>5. Steer (command) a lifeboat under oars</i> | | | |
| <i>6. Row a lifeboat</i> | | | |
| <i>7. Use lifeboat equipment</i> | | | |
| <i>8. Rig devices to aid detection</i> | | | |
| | | | |
| <i>LAUNCHING AND RECOVERY OF RESCUE BOATS</i> | | | |
| <i>1. Command launching the rescue boat</i> | | | |
| <i>2. Launch the rescue boat</i> | | | |
| <i>3. Operate the rescue boat during launch – Act as coxswain</i> | | | |
| <i>4. Operate the rescue boat during launch – Act as boat crew</i> | | | |
| <i>5. Operate the rescue boat during recovery</i> | | | |
| <i>6. Command the rescue boat during recovery</i> | | | |

* By signing, I acknowledge that I have had at least one year of sea service in a licensed capacity within the past five years and that I am serving as a licensed officer on the vessel upon which these assessments are being performed

